

**NATIONAL UNIVERSITY OF PUBLIC SERVICE**

**Doctoral School of Military Sciences**

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**The role of military medicine in the 20th century development of rehabilitation**

Doctoral (PhD) Thesis

Summary

**Consultant:**

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## **1. Identifying the scientific issue**

In today's rapidly changing world the new social and political challenges present so far unknown requirements to the military and to health care. Asymmetric warfare, the spread of terrorism, the deteriorating migrant situation and other new challenges of our days (globalisation, global warming, scarcity of water) make it exceptionally timely to examine the questions connected to military medicine.

The basic role of the national armed forces is the military defence of the country and participation in the international operations within the alliance. The aim and role of military medicine is to screen the military staff and to prepare them – physically, mentally and spiritually – for carrying out their tasks, for the conditions they have to operate in and for endurance in these conditions; in case of injury to treat, heal and rehabilitate them. Under the constantly changing circumstances military medicine sustains the operability and ensures the performance of the armed forces.

After World War II new political and military organisations were established, among them the Warsaw Pact, which disbanded in 1991, and as a result the bi-polar world system came to an end. During the Cold War the danger of total war demanded the creation of mass armies and military medicine, operating as part of logistics, prepared itself for treating huge numbers of casualties. By the end of the 20th century, following the end of the bi-polar world system conventional armed conflicts gave way to crisis management and peace keeping. These political and social changes completely transformed the security environment, asymmetric warfare emerged, which required restructuring the armed forces as well as the military medical care. The approach to and the provision of medical care transformed in the armed forces of NATO member countries so in the Hungarian military too. As a NATO member country we share security policy tasks, in which our soldiers can serve in missions thousands of kilometres away. To ensure rational medical planning thereby sustaining operability new ways and solutions must be found.

The last decades of the 20th century saw a decrease in the strength and the budget of the armed forces of NATO member countries. This meant less funds for military medicine too, so

by the turn of the millennium beside (ahead of) professional aspects other, mostly financial issues took priority. It became more and more difficult to reconcile military, health care and economic possibilities and requirements. So far the gradually introduced joint cooperation and interoperability has contributed to sustain the operability of military medicine despite the difficult economic situation. But what's next? Further larger financial state support is less likely considering the declining economic opportunities. Transferring present resources, and placing much more emphasis on the rehabilitation of injured soldiers seems a more realistic possibility. As a result more soldiers would regain their capabilities, would become operable and could resume pursuing their profession.

Thanks to screening and preventive medical measures our soldiers are in far better physical and psychical state than the average population. However, because of their profession they are exposed to far greater health damaging risks on a daily basis than the average population. Moreover, in the rotational system, nowadays our soldiers serving in nearly every part of the world are faced with huge physical and psychological pressure due to the effects of extreme climatic conditions, asymmetric warfare, terrorist threat and social and natural disasters. Training and equipping the more and more specialised soldiers requires exceeding funds, time and energy. Each soldier is indispensable on his field, a specially trained soldier is more and more difficult to replace. During the advanced planning phase of operational planning beside the issue of the operable troops and the projected casualties the issue of projected operational restorability must also be addressed. Rehabilitation and rehabilitability of the soldiers contribute to sustaining operability, to fulfilling national and international commitments and to long term medical planning.

The development of medical science makes it possible to save the lives of more and more seriously injured people and to extend the lives of chronically ill patients. These people can live for years, even decades in a handicapped or disabled state. Their status is better described by the concepts of 'activity limitations' and 'social participation limitations'. Their numbers are increasing year by year creating unforeseeable social and economic burden. At the same time the age group of those requiring rehabilitation has also grown wider. Nowadays newly born babies of very low weight can be kept alive and the ratio of the aged keeps growing in developed countries. All these place more responsibility upon society. From the point of view of the individuals it is very important how their days are spent. Do they suffer or can they find their aims and pleasures in life even in this state? What circumstances do they live in? Do they depend on society for a living or are they active, creative members of the community?

Answering these questions, that is, improving the living conditions became the central task of rehabilitation. Nowadays there is a growing demand for successful rehabilitation.

When is rehabilitation successful? It is successful when using his retained capabilities the handicapped person can re-integrate into society. The development of medicine made it possible and financial considerations helped to shorten the time of acute treatment and to bring the beginning of the rehabilitation as close as possible to active treatment. Though the success of rehabilitation is decisively affected by the time factor: its starting time and its duration; the expectation and the will of the patient is the most important. Rehabilitation is a long and difficult process, during which the patient is guided and supported by a multidisciplinary team, but this road must be covered by himself. The development of sciences, the new methods, and the use of technical innovations require modern solutions, new ways in the constantly changing and specialising rehabilitation. Social demands towards rehabilitation have increased regarding both quality and quantity so it is more and more significant in medical science both in application and research.

Handicapped people have the right to live a meaningful human life. According to economic calculations it costs more to support the invalid, than their rehabilitation, which helps their reintegration into society. In case of injured soldiers the cost/benefit quotient tips towards benefit even more. This shows how important the issue is for the military. Due to the new challenges military medicine is undergoing transformation paralleled with decreasing financial resources. Specialised soldiers drop out of the system, which is not only a loss from the human aspect, but it is a substantial financial question too. All these add to the significance of rehabilitation in the military. It is a great challenge to help an injured soldier get back to his work, since these soldiers are generally young, strong and professional in their field, but only there, so the invalid status is a tragedy for them. Nevertheless rehabilitation is not esteemed according to its merit in Hungarian health care and within this in the military medicine either. The specialists working in their field are not aware of the roots, history and interrelation of the procedures applied.

My thesis, based on special aspects, gives an overview of the relationship of military medicine and rehabilitation in the 20th century. I followed a chronological order from World War I to the present, however the events are not analysed according to their historical, political and economic importance, but only from the point of view of their significance in the field of rehabilitation. I write about the interrelation of military medicine and rehabilitation,

which though changed with time was still constantly intertwined. Nearly all the significant elements proved to be the root of all comprehensive rehabilitation practices applied in healthcare today. We know little about the history of rehabilitation in Hungary, and its relationship with military medicine is an area which has not been examined so far. I have not come across any analyses based on similar aspects. Since this issue has extraordinary importance today my intention is to draw attention to the significance of co-operation between the military and the civilian medicine and the different special domains. I would also like to point out the importance of rehabilitation in military defence and healthcare policy decision making processes with special emphasis on military medicine.

## **2. Research hypotheses**

In analysing my topic I set up the following hypotheses:

1.I intend to prove that the basic principles of modern 20th century rehabilitation (as a field of medicine) and their further development connects to the achievements of military medicine in several fields.

2.I assume that the system of invalid care organised in military medicine in Hungary during World War I. and the principles of armed services invalidity care in the period between the two world wars served as bases to devise the comprehensive rehabilitation that followed.

3.I assume that researching the problems connected to psycho-social questions, social reintegration and life quality, presenting themselves in masses in 20th century military medicine, had an important role in defining their significance in rehabilitation.

4.I think that the achievements of military medicine contributed to the modern rehabilitation of burn patients.

5.I think that military medicine experiences promoted the use of information technology and the newest bionic limb prostheses in rehabilitation.

### **3. Research objectives**

In my scientific research I set the following research objectives:

1. examine the creation of modern rehabilitation in the 20th century,
2. present the historical events in the 20th century which had a significant role in the development of rehabilitation,
3. describe the changes of military medicine in the 20th century,
4. examine the changes in the place and role of rehabilitation in military medicine during the 20th century,
5. analyse the achievements of rehabilitation in military medicine during the 20th century,
6. disclose the relationship of rehabilitation and military medicine,
7. present conclusions and suggestions, set further research directions.

#### **4. Research methods**

I studied, classified, analysed and gathered data from the relevant Hungarian and international literature.

I regularly attended training courses and I incorporated the new aspects I learned there into my thesis. I participated and gave lectures in national and international conferences, thereby acquiring new information.

Based on my daily experience I collected data from my patients and from the database of the institute I work for – HM HC Military Hospital Centre for Locomotoric Rehabilitation – and published articles. I compared my daily experiences with results of related studies. I conducted case studies and interviews.

I studied tests, questionnaires and protocols for diagnosis and therapy used in rehabilitation.

I looked for relevant articles and data in Internet databases.

Among the methods of logic I used analysis, synthesis and comparison. I also applied the statistical method of data procession.

I found and studied original documents mainly in the National Széchényi Library. I contacted the Military Archives and county archives. I also studied materials from other national and county libraries.

I found, and studied relevant doctoral theses on military science, history and medicine.

After collecting the data required to fulfil the research objectives and having processed the documentation I prepared my thesis.

## **5. The structure of the thesis**

In the introduction I state the timeliness of my topic, and I describe why I found it important to study it. This part contains my research objectives, hypotheses, and methods applied. In the first chapter I introduce the role of comprehensive rehabilitation in health care, I clarify the key concepts and summarise the history of rehabilitation and military medicine till the 20th century. The second chapter describes the comprehensive system of armed services invalidity care established in Hungary during World War I, the structure and attitude of which is still exemplary today. The third chapter deals with the basic principles of rehabilitation in the Hungarian military medicine between the two world wars. In the fourth chapter I examine the state of rehabilitation during the Cold War. The two wars of this period through military medicine contributed to the birth of the modern rehabilitation of today. The Korean with the rehabilitation of burn patients, the Vietnam War with the description of the post traumatic syndrome significantly helped the development of medical science. The fifth chapter focuses on the asymmetric challenges, within these the civil war in Sierra Leone and the Gulf War. The former, due to the excessive limb mutilations had a significant role in the development of new type limb prostheses. Examinations of the symptoms of Gulf War veterans resulted in the recovery of life-quality research. The sixth chapter examines the rehabilitation in the second half of the 20th century in Hungary with special emphasis on its interfaces with military medicine. In the seventh chapter I summarise the results of the research, the theoretical and practical relevance of the study and set further research directions. In the appendix as a counterpoint to the terrors of war I close my thesis with thoughts that are the closest to my desires.

## 6. Summary of conclusions

1.The basic principles of modern, comprehensive rehabilitation evolved in a historical process in strong connection with military medicine. Several results of military medicine were adapted by rehabilitation and today these are considered to be its basic principles. In my thesis I give an overview of the 20th century historic events, which through military medicine significantly contributed to modern rehabilitation. I take a closer look at their Hungarian effects.

2.In the 20th century the development of medical science made it possible to extend the lives of seriously ill patients. At the same time there was a growing demand for quality life among the handicapped and the invalid. Rehabilitation helps them to reintegrate into society with their retained capabilities. There is a growing demand for successful rehabilitation, the social esteem of rehabilitation is changing.

It is more and more difficult to reconcile the requirements of the medical profession and the economic possibilities in the 20th century military medicine. Soldiers are specialised, their training takes longer, their equipment becomes more and more expensive. It is exceedingly difficult to replace an injured soldier, who is a specialist in a given field, so the significance of rehabilitation has increased in military medicine too.

3. During World War I. through the treatment of limb amputated young soldiers a complex rehabilitation system was established in military medicine, which is still exemplary today. Medical treatment, prosthetisation, training, social support, and reintegration of injured and amputated soldiers first took place within the military medicine in Hungary. Between the two world wars through the armed services invalidity care it was also military medicine that introduced concepts like individual care and functional approach. Today both are among the modern basic concepts of rehabilitation.

4.Napalm, causing serious burns, was excessively used in the Korean War. Modern burn treatment and the rehabilitation of burn patients is based on the Korean experiences, conservative burn treatment was replaced by surgery. All over the world separate burn departments were established, with multidisciplinary teams treating the patients. The operations which were performed as early as possible, and the rehabilitation programmes which started already in the acute phase greatly improved the patients' chances for survival and recovery. Dr Zoltán János, who worked in the Korean military hospital founded by the Hungary, upon returning home laid down the foundations of the Hungarian plastic and burn reconstruction surgery. The leaders of Hungarian burn departments became his students.

5.One of the sad consequences of the Vietnam war was the post-traumatic stress disorder, which was first described in military medicine. The symptoms of PTSD can also be found in everyday life and it is very often present in rehabilitation since people end up in this state after experiencing physical and spiritual trauma. PTSD makes human relationships and social

integration exceedingly difficult. The description of the syndrome and the elaboration of the possibilities of treatment can be definitely connected to military medicine.

6. Following the Gulf War many of the soldiers and the civilian employees serving there showed uncertain, diffuse health problems which got the collective name of Gulf War syndrome. Since the reason of the syndrome had not been found, doctors tried to alleviate the complaints by symptom-based complex rehabilitation programmes. These programmes proved to be effective showing that symptom-based rehabilitation can be effective. This method can also be made very good use of in case of chronic diseases of unknown origin.

The problems in the care of veterans with chronic health symptoms urged researchers to seek new models of treatment. These models when fitted in the general healthcare system can also be very well applied in the care of patients living with different chronic illnesses.

The central question of rehabilitation is the quality of life. Research in life quality started booming from the 70's of the 20th century. This was mostly due to the life quality examinations of veterans suffering from the Gulf War syndrome, mainly connected to health and social relationships. Consequently by joining the research of life quality military medicine also contributed to the development of rehabilitation.

7. The belligerents carried out excessive limb mutilations during the civil war in Sierra Leone, not only on soldiers but among the civilian population too. For patients who lost both upper arms the special lower arm prosthesis developed in World War II by the German military surgeon Krukenberg started to be used again. This prosthesis is physically excellent, but aesthetically difficult to accept. International public pressure boosted the development and production of prostheses. Cutting edge bionic prostheses appeared, the rehabilitation significance of which is indisputable.

8. All the above contributed to the development of rehabilitation in Hungary. However, there were some special Hungarian features. The neglected army service invalid care hindered the development of musculoskeletal rehabilitation after World War II.

Since tuberculosis was very extensive, hospitals and sanatoriums treating it were developed in the first place. After World War II there were so many tuberculosis soldiers, that a separate TB institution was opened for them in Budakeszi, which later became the National Medical Rehabilitation Institute. The Hungarian back to work rehabilitation programmes started in the course of pulmonary disease treatment and the holistic approach of modern rehabilitation appeared.

The last great polio epidemic in Hungary was in the 50's of the last century. After the introduction of the active immunisation the crippled Heine-Medin patients were gradually forgotten. They had no organised rehabilitation for 27 years in Hungary. Since 2000 a military institute, the HM HC Military Hospital Centre for Locomotoric Rehabilitation was the first to carry out this task.

9. There is a continuous historical relationship between military medicine and rehabilitation. The modern 20th century rehabilitation was born in military medicine.

## **7. Scientific results**

1. During my research I proved that the genesis of the basic concepts of modern 20th century rehabilitation (as an area of medicine) and its further development is inseparable from military medicine. The modern 20th century rehabilitation was born in military medicine.
2. I found that in Hungary – during World War I – the first comprehensive rehabilitation system was established in military medicine, the structure of which is still exemplary, and it was also in military medicine that several basic principles of modern rehabilitation like the individual treatment and the functional approach first appeared.
3. I proved that the significance of psycho-social factors, social integration and most importantly life quality in rehabilitation were first established by research conducted in military medicine.
4. Having conducted a complex survey I showed that the scientific foundation of the modern burn-treatment, the acceptance and spread of its concepts is the merit of military medicine.
5. I summarised, that the research of military medicine provided the starting point and showed further directions to the development of the cutting edge bionic prostheses and other uses of information technology in rehabilitation.

## 8. Recommendations

My thesis can be used:

1. in military decision making. In the new security policy environment when it is faced with new challenges the defence forces and military medicine must also transform. My thesis can help decision making concerning military medicine, since it throws light on the growing significance of military medicine and within it to rehabilitation.
2. in questions concerning the financing of national health care. By increasing the funds of the national budget spent on health care more people can be reintegrated to work thereby decreasing the burdens on society
3. in health policy decisions. My thesis draws attention to the growing significance of rehabilitation and to the decisive role of military medicine in rehabilitation in the past and present – since it provides part of the civilian treatment too.
4. for bringing the co-operation of civilian and military medicine closer.
5. to introduce the achievements of military medicine; especially to civilian health care in national and international fora, in the form of publications and lectures.
6. as educational and further training material, for doctors working in rehabilitation or on its borderline in the first place and for other members of the rehabilitation team. It is important in the university or college education, but even more useful in rehabilitation, military medicine and border area further training.

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## **10. Professional Curriculum Vitae**

### **Studies**

1987: graduation from the University of Pécs Medical School

1992: specialised examination in internal medicine

1999: specialised examination in locomotoric rehabilitation

### **Professional experience**

For ten years I worked on the active internal department of the municipal hospital in Sümeg. The department was closed due to the reorganisation of the hospital so I had to change.

I have been working at the 1st Intensive Locomotoric Rehabilitation Department of the HM HC Military Hospital Centre for Locomotoric Rehabilitation since 1996. I am a public servant. Since 2006 I have been a head physician and deputy department leader. I have been a member of the Hungarian Association of Medical Rehabilitation and Physical Medicine since 1999.

As a result of the professional credit point further trainings I attended I have a licence for both my specialisations.

### **Further professional skills**

Language exams:

English: intermediate level C, 2006.

German: intermediate level A and B, 2004.

Russian: university comprehensive exam

Beside the publications in the list above I regularly prepare lectures for the annual conferences of ORFMMT. I take part in in-house and other further training both as a participant and a lecturer. I am a reader of the professional and academic journals, books and I follow the newest news on rehabilitation on the Internet.

User level computer skills in Word, Power Point, Excel, Internet.